

## A New Species of the Genus *Pterostichus* (Coleoptera, Carabidae) from Mt. Shirakusa-yama in Gero-shi of Gifu Prefecture, Central Japan

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**Abstract** A new species of macrocephalic pterostichine carabid beetle is described from Gero-shi of Gifu Prefecture, Central Japan, under the name of *Pterostichus shojii*.

After the discovery of *Pterostichus todai toyoshimai* SUGIMURA (2002, pp. 91–99) in 2000 from Mt. Kiso-koma-ga-take of the Kiso Mountains on the eastern side of the Kiso River, he began to search for other populations of macrocephalic pterostichines in the neighboring areas on the western side of the Kiso River in cooperation with his colleagues. In the autumn of 2002, a female of a macrocephalic pterostichine was obtained on the western slope of Mt. Shirakusa-yama, the mountain lying in the eastern area of Gero-shi and about 50 km distant to the west from Mt. Éna-san, the type locality of *Pterostichus todai todai*. At the first glance, this specimen seemed more closely related to *Pterostichus uedaorum* MORITA et HIRASAWA (1996, pp. 27–30) from Mt. Iwôzen and Mt. Hakusan than to *P. todai* MORITA et KANIE (1996, pp. 163–167) in view of the slender body, the obtrapezoidal pronotum and the narrowed elytral base. However, a male specimen obtained in the next autumn unexpectedly had a very broad body, subquadrate pronotum, parallel-sided elytra and peculiarly robust aedeagus, and was easily distinguishable from all the allied species. Up to the present, totally three males and seven females from this population have been obtained in this area, and their morphological characteristics are very stable. Therefore, the author has recognized the population from Mt. Shirakusa-yama as being new to science and is going to describe it under the name of *Pterostichus shojii* in this paper. The specific name is dedicated to Mr. Shôji KATÔ for his great contribution to the research of the pterostichine carabid fauna in this area.

The abbreviations used in the table inserted in this paper are as follows: HW – greatest width of head; PW – greatest width of pronotum; PL – length of pronotum (measured along the median line); PA – width of pronotal apex; PB – width of pronotal base; EW – greatest width of elytra; EL – greatest length of elytra.

Before going further, he wishes to express his hearty thanks to Dr. Shun-Ichi UÉNO of the National Science Museum, Tokyo for his critical reading of the manuscript. He is also indebted to Mr. Ryôji TOYOSHIMA of Nagoya for his kind help and ad-

vice in this study. Thanks are also due to Messrs. Shôji KATÔ of Tsushima-shi, Aichi Prefecture and Naoki TODA of Nagoya, and to Mrs. Yoriko INAGAKI of Yokkaichi-shi, Mie Prefecture for their kind cooperation in collecting the materials.

The holotype to be designated in this paper will be preserved in the collection of the National Science Museum, Tokyo.

*Pterostichus shojii* SUGIMURA, sp. nov.

[Japanese name: Gero-ôzu-naga-gomimushi]

(Fig. 1-2)

Male. Length (measured from clypeal apex to elytral apices): 16.30–16.81 mm. Humeral width: 4.34–4.44 mm. Other significant measurements are shown in Table 1.

Body rather flat; outline of body broader than those in other allied species. Colour dark brown; head darker though the labial and maxillary palpi, labrum, antennae and legs are lighter.

Head very large and voluminous, apparently wider than long, a little narrower than or almost as wide as the widest portion of pronotum; apical margin of labrum very strongly emarginate; frontal suture distinct; clypeus sparsely and irregularly punctate near apex with apical margin shallowly emarginate, medio-apical portion narrowly with microsculpture consisting of fine meshes, latero-basal portions followed by the ends of frontal furrows somewhat depressed and rather deeply wrinkled; frontal furrows very short and rather shallow, extending from frontal suture and reaching near post-eye level, very weakly arcuately divergent; the portions beside the posterior half of the furrows shallowly and transversely wrinkled; eyes small and entirely flat; tempora strongly tumid from neck to the widest portion, then moderately and rather linearly narrowed anteriorly; lateral grooves short, deep and almost linear, extending from a little behind the mid-eye level and terminating fairly before the posterior supraorbital setae, slightly convergent backwards; additional grooves shallow though distinct, extending from ends of eyes and adjoining the posterior ends of lateral grooves; anterior supraorbital setae situated a little inside the lateral grooves at post-eye level or a little behind that level; surface bearing fine, shallow and irregular wrinkles, and sparsely and microscopically punctate, microsculpture on occiput consisting of meshes; genae smooth without wrinkles on ventral surface; mentum tooth bifid; mentum irregularly wrinkled, submentum bearing several shallow and longitudinal wrinkles along the apical margin; gula shortly and longitudinally sulcate at the middle; gular sutures very fine though distinct, both sides of the sutures transversely wrinkled; ventral surface of neck sparsely punctate, the portions just inside gular sutures sparsely with very short, distinct and longitudinal wrinkles; mandibles very long and stout, left one a little longer than the right, somewhat sinuate near base and strongly hooked inwards at about apical 1/3, almost of the same length and shape in both sexes (apical 1/2 of the left one lacking in the holotype); antennae subfiliform, ratio of each segment (I–XI) as follows:— 1:0.51:0.87:0.85:0.81:0.79:0.73:0.66:0.62:0.57:0.69, 2nd segment unisetose



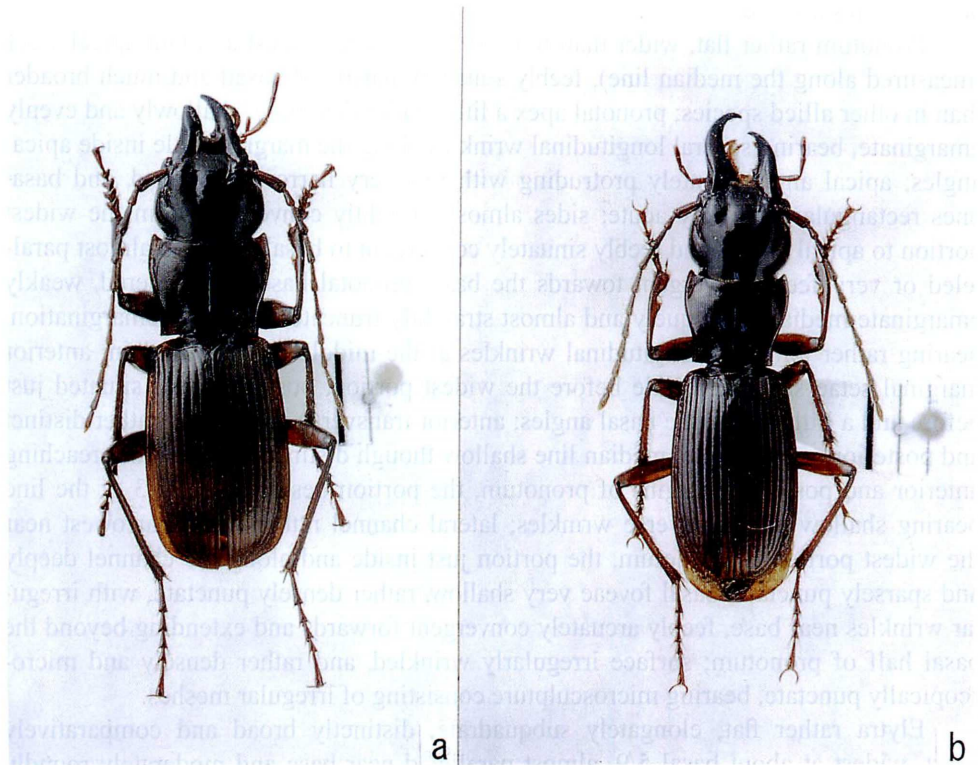


Fig. 1. *Pterostichus shojii* SUGIMURA, sp. nov., from Mt. Shirakusa-yama; a: male (holotype); b: female (paratype).

Table 1. Measurements of *Pterostichus shojii* SUGIMURA, sp. nov.

	Length (mm)	PW/HW	PW/PL	PW/PA	PW/PB	PA/PB	EW/PW	EL/EW
Holotype♂	16.42	1.09	1.52	1.11	1.24	1.12	1.18	1.54
1♂	16.81	1.08	1.53	1.12	1.21	1.08	1.19	1.58
1♂	16.30	1.10	1.54	1.11	1.20	1.09	1.22	1.52
1♀	16.01	1.02	1.47	1.12	1.27	1.14	1.16	1.66
1♀	15.68	1.01	1.51	1.13	1.32	1.17	1.18	1.65
1♀	16.22	0.99	1.52	1.10	1.30	1.19	1.21	1.61
1♀	16.02	1.01	1.54	1.13	1.29	1.14	1.22	1.58
1♀	15.79	1.01	1.52	1.12	1.31	1.17	1.21	1.63
1♀	16.76	1.05	1.54	1.13	1.28	1.13	1.15	1.63
1♀	15.68	1.00	1.45	1.12	1.26	1.12	1.19	1.61

or sometimes asetose.

Pronotum rather flat, wider than long, nearly square, widest at about apical  $1/5.1$  (measured along the median line), feebly sinuately narrowed basad and much broader than in other allied species; pronotal apex a little wider than base, shallowly and evenly emarginate, bearing several longitudinal wrinkles along the margin a little inside apical angles; apical angles acutely protruding with tips very narrowly rounded, and basal ones rectangular or feebly acute; sides almost straightly convergent from the widest portion to apical angles and feebly sinuately convergent to basal  $1/4$ , then almost paralleled or very feebly divergent towards the base; pronotal base not bordered, weakly emarginate medially, obliquely and almost straightly truncate beside the emargination, bearing rather long and longitudinal wrinkles at the middle of basal margin; anterior marginal setae situated a little before the widest portion, posterior ones situated just before and a little inside the basal angles; anterior transverse impression rather distinct and posterior one obsolete; median line shallow though distinct, each end not reaching anterior and posterior margins of pronotum, the portion beside apical  $2/3$  of the line bearing shallow and transverse wrinkles; lateral channel rather wide, narrowest near the widest portion of pronotum, the portion just inside and along the channel deeply and sparsely punctate; basal foveae very shallow, rather densely punctate, with irregular wrinkles near base, feebly arcuately convergent forwards and extending beyond the basal half of pronotum; surface irregularly wrinkled, and rather densely and microscopically punctate, bearing microsculpture consisting of irregular meshes.

Elytra rather flat, elongately subquadrate, distinctly broad and comparatively short, widest at about basal  $5/9$ , almost paralleled near base and moderately roundly narrowed apicad, with shallow preapical emarginations; shoulders distinct, rather strongly reflected; basal portions beside scutellum weakly depressed; elytral apices divided, sutural angles angulate and sometimes acutely protruding; inner plica hardly visible; basal border rather arcuate and reaching scutellar striole; scutellum with deep and longitudinal wrinkles; intervals scarcely convex medially and somewhat convex near apices, microscopically and rather densely punctured, and also with distinct microsculpture consisting of meshes; interval 3 with two dorsal pores, anterior one at about basal  $1/2$ , posterior one at about apical  $1/5$ , each pore adjoining stria 2; striae shallow, striae 1–2 becoming shallower near apical ends, striae 3–4 and 5–6 respectively joining just before apical ends, stria 6 sometimes not reaching and stria 7 never reaching the basal border; scutellar striole rather long and shallow, lying on interval 1, sometimes joining stria 1; marginal series of pores 12–15 in number, widely spaced at the middle.

Legs slender; dorsal surface of all tarsi smooth, scattering sparse punctures near apical margin; protibiae slightly bowed at apical  $1/3$  in both sexes; surface of femora, hind coxae and trochanters shallowly wrinkled.

Prosternum deeply and rather densely punctate on lateral sides; prosternal process not bordered, longitudinally depressed medially, with apex rather obtusely angulate; prepisterna rather deeply and densely punctate only near the prosternum; pronotal epi-



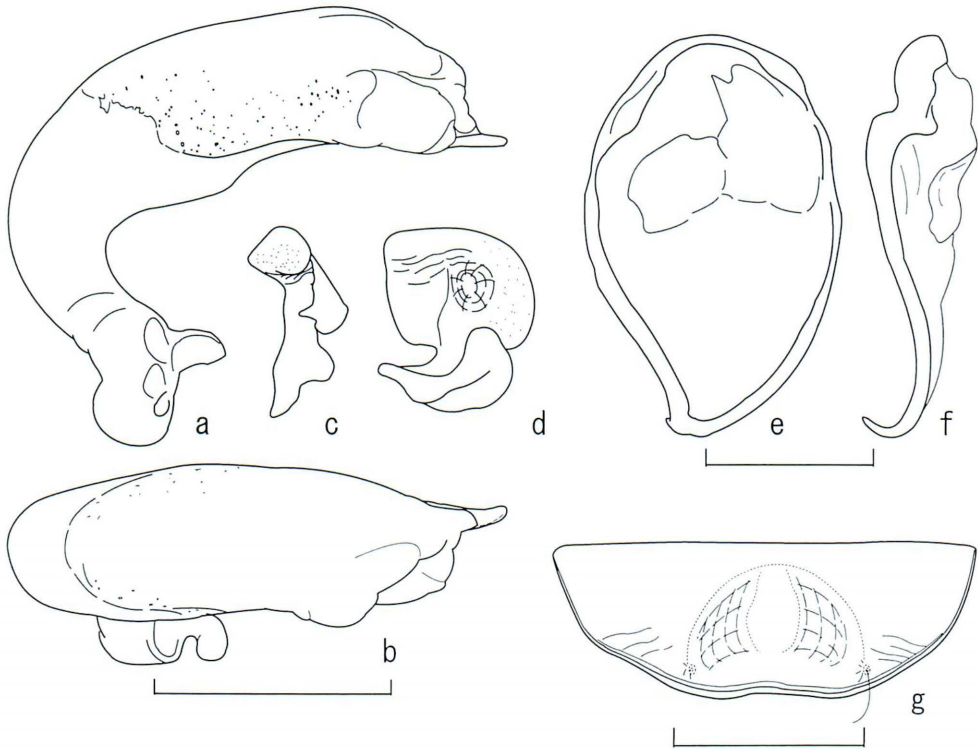


Fig. 2. Male genitalia of *Pterostichus shojii* SUGIMURA, sp. nov., holotype; a–b, aedeagus: a, left lateral view; b, dorsal view; c, left paramere; d, right paramere; e–f, genital segment: e, ventral view; f, left lateral view; g, male terminal sternite. Scale: 2 mm.

pleura bearing short and transverse wrinkles; mesosternum shallowly and rather sparsely punctate; mesepisternum deeply and densely punctate; metasternum punctate near lateral sides; sternites 3–4 shallowly and longitudinally wrinkled, punctate near lateral sides; lateral portions of sternites 5–7 bearing short and longitudinal wrinkles along apical margins; terminal sternite rather deeply and semicircularly depressed between apical setae, and very feebly and longitudinally raised at the middle of depression, bearing several long wrinkles along the margin outside apical setae, apical margin shallowly emarginate medially and extremely feebly sinuate or shortly and almost straightly oblique beside the emargination, and distinctly marginate along the border.

Aedeagus robust, strongly bent inwards at about basal 1/3 and distorting leftwards, weakly carinately convex on the middle of ventral surface, apical lobe comparatively long, with apex rounded and very slightly curved rightwards in dorsal view and slightly inclined dextrally in frontal view; right paramere short, not elongate, with apex rounded and rather strongly produced forwards, weakly bent inwards near the base, sparsely punctate only on the apical portion of outer surface, inner surface and the apical portion of outer surface bearing microsculpture consisting of meshes; left paramere

wide and quadrate with corners rounded, posterior margin curved inwards, roundly and rather deeply concave medio-anteriorly, and shallowly so posteriorly, with several transverse wrinkles above the posterior cavity; genital segment strongly hooked inwards at the base.

Female. Length; 15.68–16.76 mm. Humeral width; 3.45–3.80 mm. Other significant measurements are also shown in Table 1.

Body more elongate and comparatively slenderer than in male. Ratio of each antennal segment (I–XI) as follows: 1:0.53:0.76:0.83:0.83:0.83:0.76:0.70:0.66:0.59:0.72. Head a little wider or almost as wide as the widest portion of pronotum. Pronotum longer than wide, apparently obtrapezoidal with base much narrower than apex, widest at about apical 1/5.4; sides arcuately convergent forwards, evenly and sinuately convergent to basal 1/5, then very feebly divergent towards the base; posterior marginal setae situated at a level a little before the basal margin of pronotum; basal foveae not so broadly extending. Elytra elongately subquadrate, apparently broadened from base to the widest portion, moderately roundly narrowed apicad with preapical emarginations deep and rather distinct; shoulders almost smooth, not so strongly reflected. Terminal sternite of abdomen shallowly and transversely depressed at apical 1/3, bearing several shallow and longitudinal wrinkles along the margin between two pairs of setae, with apical margin roundly arcuate.

*Type series.* Holotype: ♂, Mt. Shirakusa-yama, ca. 1,000 m in alt., Gero-shi, Gifu Pref., 13~20-IX-2003, Akemichi SUGIMURA leg. Paratypes: 1 ♀, same locality as for the holotype, 14~25-IX-2002, Ryôji TOYOSHIMA leg.; 1 ♀, same locality as for the holotype, 20~28-IX-2003, Naoki TODA leg.; 1 ♀, same locality as for the holotype, 3~11-X-2003, Shôji KATÔ leg.; 1 ♀, same locality as for the holotype, 11~26-X-2003, Akemichi SUGIMURA leg.; 1 ♂, same locality as for the holotype, 11-X~9-XI-2003, Ryôji TOYOSHIMA leg.; 1 ♀, same locality as for the holotype, 19-IX~3-X-2004, Ryôji TOYOSHIMA leg.; 2 ♀♀, same locality as for the holotype, 3~10-X-2004, Shôji KATÔ leg.; 1 ♂, same locality as for the holotype, 19~28-IX-2005, Akemichi SUGIMURA leg.

*Notes.* This new species is easily distinguishable from other allied species by having the following characteristics: 1) body apparently broad in male, 2) pronotum bearing distinct wrinkles, 3) median lobe of male genitalia robust, strongly bent inwards at about basal 1/3 and distorting leftwards, weakly and carinately convex at the middle of ventral surface, with apical lobe well produced.

## 要 約

杉村明道：岐阜県下呂市東部の白草山から発見されたナガゴミムシの1新種。—— 著者らは2000年の秋に木曽山地の木曽駒ヶ岳からキソコマオズナガゴミムシ *Pterostichus todai toyoshimai* を再発見したのち、木曽川西岸においてオオズナガゴミムシの調査を開始した。その結果、2002年の秋に下呂市東部の白草山西斜面から1頭の雌のオオズナガゴミムシを採集した。この個体は比較的細長い体型を有しており、近隣の恵那山から記録されたエナオオズナガゴミムシ

*Pterostichus todai* よりむしろ医王山と白山から記録されたウエダオオズナガゴミムシ *Pterostichus uedaorum* に近縁であると思われた。しかし、翌年の秋に採集された雄個体は、非常に幅広い体形と太く特徴的な交尾器中央片を有していた。詳細な比較検討の結果、これまでに採集された10個体の特徴的な形質は、いずれも安定しており、他の近縁のオオズナガゴミムシから容易に区別できるので、ゲロオオズナガゴミムシ *Pterostichus shojii* SUGIMURA, sp. nov. と命名して記載した。

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